

# APPRENTICESHIP & CERTIFICATION

## Study Guide Industrial Mechanic (Millwright)



  
Newfoundland  
Labrador

# **Apprenticeship and Certification**

## **Study Guide**

# **Industrial Mechanic (Millwright)**

**(Based on Red Seal Occupational Standard – RSOS 2017)**

Government of Newfoundland and Labrador  
Department of Advanced Education, Skills and Labour

**Version 7  
June 2019**



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## Introduction

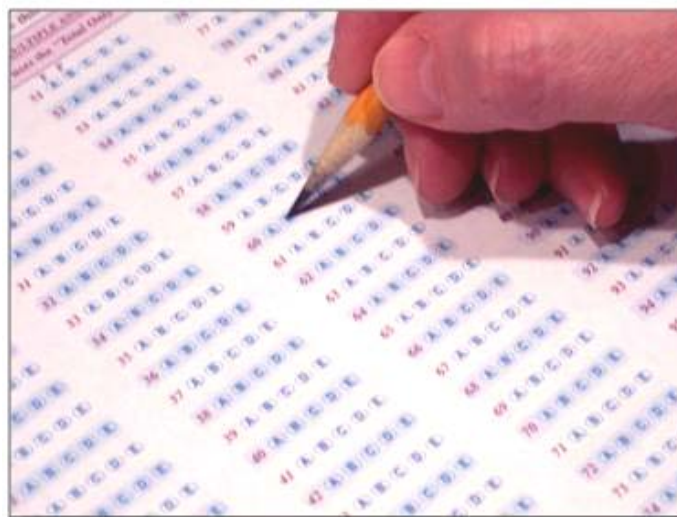
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This Study Guide has been developed by the Newfoundland and Labrador Department of Advanced Education, Skills and Labour, Apprenticeship and Trades Certification Division, to assist apprentices and trade qualifiers as they prepare to write the Interprovincial (IP) Red Seal Exam. IP Exams are available for all Red Seal trades. For a list of Interprovincial trades please refer to the Department of Advanced Education, Skills and Labour website: <https://www.aesl.gov.nl.ca/app/trades.html>

### Some of the specific goals of this guide are:

- ⇒ to help you understand the skills and knowledge that might be covered on the exam
- ⇒ to help you identify your strengths and weaknesses
- ⇒ to provide organization and structure for a course of study
- ⇒ to provide a list of resources to help you with your study plan
- ⇒ to support and supplement the teaching and learning process

This study guide outlines the theoretical portion of the program. The intent is not to replace technical training provided under the guidance of instructors. Rather, it is a tool to be used in conjunction with formal training.



## Exam Process

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### Before the Exam

You must contact the nearest Apprenticeship and Trades Certification Divisional office to make request to write the IP Red Seal exam (*See Appendix A for a list of regional offices*). Upon approval, the Apprenticeship Program Officer (APO) will notify you of your eligibility to write the exam, and provide you with scheduling information.

### During the Exam

**You must bring:**

- personal identification such as a photo or signature ID or valid Newfoundland and Labrador driver's license
- your notification letter

**The following will be provided:**

- a calculator (*see Appendix B for calculator information*)
- all other items required such as pencils, scrap paper, etc.

**Important Note:**

Personal cell phones, calculators, or other electronic equipment are NOT allowed into the exam room. If you do bring them, they will be stored away and returned to you when you have completed the exam.

### After the Exam

Results will be mailed to you approximately seven to ten days after completion of the exam. All necessary instructions and information will be provided in the results letter.

The percentage mark you obtained will be provided. You will also be given a section by section breakdown, showing how many questions were in each section, as well as the number of questions in each section you completed successfully.

If you are successful in obtaining a 70% or more on your exam, you will be issued a Newfoundland and Labrador Certificate of Qualification with a Red Seal endorsement.

## Exam Format

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All IP Red Seal exams are written in multiple-choice format. Each exam has between 100 and 150 questions. A multiple choice question consists of a stem (a complete question) followed by four options (A, B, C, D). The stem contains all the information necessary to answer the question. The options consist of the one correct answer and three “distracters.” Distracters are incorrect. (See Appendix C for a sample answer sheet).

IP Red Seal exams contain three types of questions:

### Level 1 Knowledge and Recall

Questions at this level test your ability to recall and understand definitions, facts, and principles.

### Level 2 Procedural and Application

Questions at this level test your ability to apply your knowledge of procedures to a new situation.

### Level 3 Critical Thinking

Questions at this level test your ability to interpret data, solve problems and arrive at valid conclusions.

On the following pages, examples of each of the three types of questions are provided.

#### Level 1 Examples:

1. When hacksawing, what determines the pitch of the blade selected?
  - A. the type of hacksaw to be used
  - B. the type of work to be done
  - C. the speed at which the work is to be done
  - D. the accuracy desired





2. What is the purpose of the volute in the discharge of a centrifugal pump?

- A. convert pressure to velocity
- B. convert velocity to pressure
- C. increase both output and pressure
- D. increase output velocity



3. What is the recommended percent slack for a horizontal, one direction chain drive?

- A. 2%
- B. 5%
- C. 10%
- D. 20%



### Level 2 Examples:

1. Two pulleys have diameters of 10" and 12". If they are connected by a belt and the large pulley turns at 180 RPM, what would be the RPM of the small pulley?

- A. 216 RPM
- B. 510 RPM
- C. 700 RPM
- D. 1100 RPM



2. A 12 volt electrical circuit has a current of 5 amps. What should the resistor wattage be for this circuit?

- A. 8 watts
- B. 24 watts
- C. 32 watts
- D. 60 watts



3. What is the tap drill size for a  $\frac{3}{4}$ " - 10 UNC tap?

- A. .578"
- B. .650"
- C. .688"
- D. .750"



### Level 3 Examples:

1. When correcting suspected coupling misalignment in a pump and motor unit, after a visible inspection, what would be the proper sequence to follow?

- A. Check for soft foot, coupling/shaft runout, piping strain
- B. Check for piping strain, soft foot, coupling/shaft runout
- C. Check for coupling/shaft runout, soft foot, piping strain
- D. Check for soft foot, piping strain, coupling/shaft runout



2. A new motor was fitted to a centrifugal pump, aligned and put back into service. It was found then that there was no discharge pressure. What is the most likely problem?

- A. The alignment was incorrect
- B. The foot valve was not working
- C. The motor was turning the wrong way
- D. There was too much clearance on the impeller



3. What would be the centrifugal force of a 3 oz weight at a 15" radius rotor rotating at 900rpms?

- A. 20 lbs
- B. 45 lbs
- C. 58.3 lbs
- D. 64.5 lbs



**Source of questions:**

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=124#>

## Exam Content

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### Understanding the *Red Seal Occupational Standard (RSOS)*

The Red Seal model has historically been based on the development of the National Occupational Analysis (NOA) which supports the development of multiple-choice format examinations.

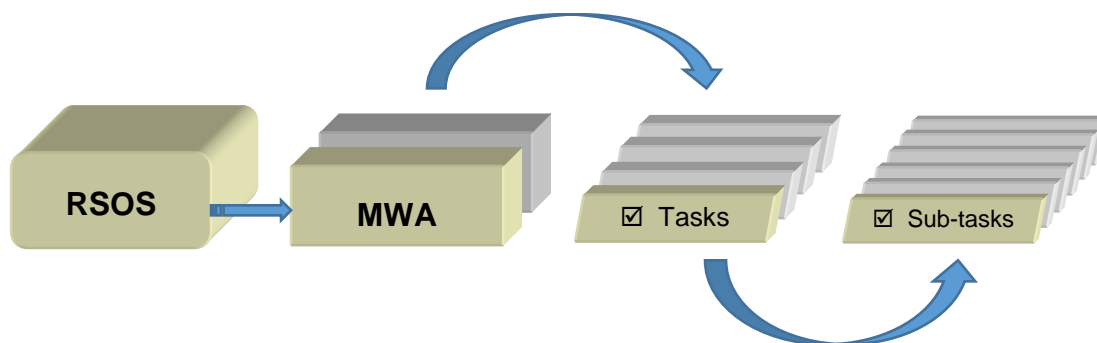
The RSOS was introduced in 2015 and is now taking the place of the NOA. Each RSOS or NOA sets the standard for a Red Seal trade. The Red Seal Inter-provincial Examination is based on the Red Seal Standard.

The new standards provide greater consistency in learning resources and allow for increased industry involvement in the development of these standards. This new model places increases emphasis on apprenticeship training and assessing skills with industry learning objectives, outcomes and performance criteria.

The RSOS for each trade describes the tasks and sub-tasks; skills and knowledge requirements; summary of essential skills; safety information; trends affecting the trade; technical terms; names of tools and equipment; acronyms; learning objectives and outcomes; industry expected performance and essential skills related to each sub-task.

The RSOS is an excellent tool to use as you study for the Red Seal exam. RSOSs can be found at <http://www.red-seal.ca/resources/n.4.1-eng.html>

RSOS material is organized into the following categories: **MWA (Major Working Activity)**. The MWAs are further broken down into **TASKS** (*describes activities within an MWA*) and **SUB-TASKS** (*describe activities within a task – This is what the exam is based on*).

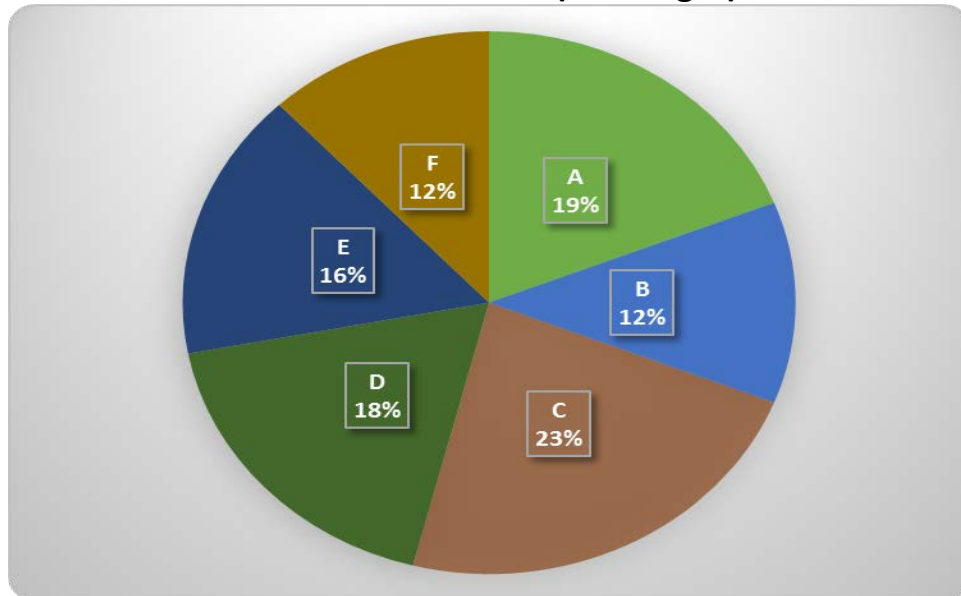


The NOA will continue to be used as the occupational standard for trades that do not yet have an RSOS developed.

## RSOS Pie Chart

The RSOS Pie Chart presents the MWA percentages in the form of a pie chart which tells you the approximate number of questions from each MWA. For example, 19% of the questions on the **Industrial Mechanic (Millwright)** Exam will be based on **MWA A**.

**Industrial Mechanic (Millwright)**



MWA Titles			
<b>MWA A</b>	Performs Occupational Skills	<b>MWA D</b>	Services Material Handling/Processing Systems
<b>MWA B</b>	Performs Rigging, Hoisting/Lifting and Moving	<b>MWA E</b>	Services Fluid Power Systems
<b>MWA C</b>	Services Mechanical Power Transmission Components and Systems	<b>MWA F</b>	Performs Preventive and Predictive Maintenance, Commissioning and Decommissioning

## Exam Breakdown

The **Industrial Mechanic (Millwright)** IP Red Seal Exam currently has 135 questions. The following table shows a breakdown of the approximate number of questions that come from each RSOS MWA. It is important to note that the number of questions can change at any time. When you are ready to write your exam you may contact your regional office to verify the number of questions (*see Appendix A for phone numbers*).

		# of Questions
<b>MWA A</b>	<b>Performs Occupational Skills</b>	<b>25</b>
<b>Task 1</b>	Performs safety-related functions	
<b>Task 2</b>	Uses tools and equipment	
<b>Task 3</b>	Performs routine trade tasks	
<b>Task 4</b>	Uses communication and mentoring techniques	
<b>Task 5</b>	Performs measuring and layout	
<b>Task 6</b>	Performs cutting and welding operations	
<b>MWA B</b>	<b>Performs Rigging, Hoisting/Lifting and Moving</b>	<b>17</b>
<b>Task 7</b>	Plans rigging, hoisting/lifting and moving	
<b>Task 8</b>	Rigs, hoists/lifts and moves load	
<b>MWA C</b>	<b>Services Mechanical Power Transmission Components and Systems</b>	<b>32</b>
<b>Task 9</b>	Services prime movers	
<b>Task 10</b>	Services shafts, bearings and seals	
<b>Task 11</b>	Services couplings, clutches and brakes	
<b>Task 12</b>	Services chain and belt drive systems	
<b>Task 13</b>	Services gear systems	
<b>Task 14</b>	Performs shaft alignment procedures	
<b>MWA D</b>	<b>Services Material Handling/Processing Systems</b>	<b>24</b>
<b>Task 15</b>	Services robotics and automated equipment	
<b>Task 16</b>	Services fans and blowers	
<b>Task 17</b>	Services pumps	
<b>Task 18</b>	Services compressors	
<b>Task 19</b>	Services process piping, tanks and containers	
<b>Task 20</b>	Services conveying systems	
<b>MWA E</b>	<b>Services Fluid Power Systems</b>	<b>21</b>
<b>Task 21</b>	Services hydraulic systems	
<b>Task 22</b>	Services pneumatic and vacuum systems	
<b>MWA F</b>	<b>Performs Preventative &amp; Predictive Maintenance, Commissioning &amp; Decommissioning</b>	<b>16</b>
<b>Task 23</b>	Performs preventative and predictive maintenance	
<b>Task 24</b>	Commissions and decommissions equipment	
	<b>Total</b>	<b>135</b>

## RSOS Sub-tasks

The following *RSOS Task Profile Checklist* outlines the MWAs, tasks and sub-tasks for your trade. The IP Red Seal exam is written to test your knowledge and abilities regarding the sub-tasks in the RSOS. This chart can be used to review your current knowledge. You can review by placing a checkmark (✓) next to those you understand fully.

Place your focus on those you do not understand and study them until you are comfortable with the material. Think of possible questions in that particular content area.

The RSOS also contains a list of “supporting knowledge and abilities” for each sub-task. They are the skills and knowledge you must have to perform a sub-task. The supporting knowledge and abilities identified under each sub-task will be very helpful as you review. The list can be found in the RSOS, on the Red Seal website, for your trade.

# Task Profile Checklist

## Based on 2017 RSOS

### Industrial Mechanic (Millwright)

#### MWA A: Performs Occupational Skills

##### Task 1: Performs Safety-Related Functions

Sub-Tasks

- Uses personal protective equipment (PPE) and safety equipment
- Maintains safe work site
- Protects the environment
- Performs lock-out/tag-out and zero energy state procedures

##### Task 2: Uses Tools and Equipment

Sub-Tasks

- Uses hand and portable power tools
- Uses shop machines
- Uses access equipment

##### Task 3: Performs Routine Trade Tasks

Sub-Tasks

- Plans work
- Fabricates work piece
- Lubricates systems and components
- Performs leveling of components and systems
- Uses fastening and retaining devices
- Performs material identification
- Performs heat treatment of metal
- Uses mechanical drawings and schematics



## MWA A: Occupational Skills (Cont'd)

### Task 4: Uses Communication and Mentoring Techniques

Sub-Tasks

- Uses communication techniques
- Uses mentoring techniques

### Task 5: Performs Measuring and Layout

Sub-Tasks

- Prepares work area, tools and materials
- Measure material and components
- Lays out components
- Maintains precision measuring and layout tools

### Task 6: Performs Cutting and Welding Operations

Sub-Tasks

- Cuts material with oxy-fuel and plasma arc equipment
- Joins material using oxy-fuel welding equipment
- Welds material using shielded metal arc welding (SMAW) equipment
- Welds material with gas metal arc welding (GMAW) equipment
- Welds material with gas tungsten arc welding (GTAW) equipment (NOT COMMON CORE)
- Maintains welding equipment

## MWA B: Performs Rigging, Hoisting/Lifting and Moving

### Task 7: Plans Rigging, Hoisting/Lifting and Moving

Sub-Tasks

- Determines load
- Selects rigging equipment
- Selects hoisting/lifting and moving equipment
- Secures area

### Task 8: Rigs, Hoists/Lifts and Moves Load

Sub-Tasks

- Sets up rigging, hoisting/lifting and moving equipment
- Performs hoist/lift and move
- Maintains rigging, hoisting/lifting and moving equipment

## MWA C: Services Mechanical Power Transmission Components and Systems

### Task 9: Services Prime Movers

#### Sub-Tasks

- Installs prime movers
- Diagnoses prime movers
- Maintains prime movers
- Repairs prime movers

### Task 10: Services Shafts, Bearings and Seals

#### Sub-Tasks

- Installs shafts, bearings and seals
- Diagnoses shafts, bearings and seals
- Maintains shafts, bearings and seals
- Repairs shafts, bearings and seals

### Task 11: Services Couplings, Clutches and Brakes

#### Sub-Tasks

- Installs couplings, clutches and brakes
- Diagnoses couplings, clutches and brakes
- Maintains couplings, clutches and brakes
- Repairs couplings, clutches and brakes

### Task 12: Services Chain and Belt Drive Systems

#### Sub-Tasks

- Installs chain and belt drive systems
- Diagnoses chain and belt drive systems
- Maintains chain and belt drive systems
- Repairs chain and belt drive systems

### Task 13: Services Gear Systems

#### Sub-Tasks

- Installs gear systems
- Diagnoses gear systems
- Maintains gear systems
- Repairs gear systems

### Task 14: Performs Shaft Alignment Procedures

#### Sub-Tasks

- Performs rough alignment
- Performs dial alignment
- Performs laser alignment

## MWA D: Services Material Handling/Process Systems

### Task 15: Services Robotics and Automated Equipment

#### Sub-Tasks

- Installs robotics and automated equipment
- Diagnoses robotics and automated equipment
- Maintains robotics and automated equipment
- Repairs robotics and automated equipment

### Task 16: Services Fans and Blowers

#### Sub-Tasks

- Installs fans and blowers
- Diagnoses fans and blowers
- Maintains fans and blowers
- Repairs fans and blowers

### Task 17: Services Pumps

#### Sub-Tasks

- Installs pumps
- Diagnoses pumps
- Maintains pumps
- Repairs pumps

### Task 18: Services Compressors

#### Sub-Tasks

- Installs compressors
- Diagnoses compressors
- Maintains compressors
- Repairs compressors

### Task 19: Services Process Piping, Tanks and Containers

#### Sub-Tasks

- Installs process tanks and containers
- Installs process piping
- Diagnoses process tanks and containers
- Diagnoses process piping
- Maintains process tanks and containers
- Maintains process piping
- Repairs process tanks and containers
- Repairs process piping

### Task 20: Services Conveying Systems

#### Sub-Tasks

- Installs conveying systems
- Diagnoses conveying systems
- Maintains conveying systems
- Repairs conveying systems

## MWA E: Services Fluid Power Systems

### Task 21: Services Hydraulic Systems

#### Sub-Tasks

- Installs hydraulic systems
- Diagnoses hydraulic systems
- Maintains hydraulic systems
- Repairs hydraulic systems

### Task 22: Services Pneumatic and Vacuum Systems

#### Sub-Tasks

- Installs pneumatic and vacuum systems
- Diagnoses pneumatic and vacuum systems
- Maintains pneumatic and vacuum systems
- Repairs pneumatic and vacuum systems

## MWA F: Performs Preventative and Predictive Maintenance, Commissioning and decommissioning

### Task 23: Performs Preventative and Predictive Maintenance

#### Sub-Tasks

- Performs preventative maintenance activities
- Performs vibration analysis procedures
- Performs balancing procedures
- Performs non-destructive testing (NDT) procedures
- Performs fluid analysis procedures
- Performs predictive maintenance activities

### Task 24: Commissions and Decommissions Equipment

#### Sub-Tasks

- Commissions systems and components
- Decommissions systems and components

## Create a Study Plan

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As you prepare for your exam, it is important to plan a schedule. The following two tables will help you stay on track.

The first table is a **“Weekly Study Plan.”** In this table list the areas you will focus your study for each day. You should include items you need to review as well as items you need to study. Remember, more time will be needed for study in areas you find difficult, whereas you may only require review in areas you are more familiar with. As you work through the RSOS sub-task list you can start to fill in this table.

The second table is a **“Study Time Table.”** It is important to create a study schedule where you determine the best days of the week and times of day for you to study.

Print several copies of these tables and fill out for each week of study. It is important to stick to your study schedule.

**Weekly Study Plan for Week of:** \_\_\_\_\_

	Area of Study 1	Area of Study 2	Area of Study 3	Area of Study 4	Area of Study 5	Area of Study 6
Mon.						
Tues.						
Wed.						
Thu.						
Fri.						
Sat.						
Sun.						

**Study Time Table for Week of:** \_\_\_\_\_

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8:00 AM - 9:00 AM							
9:00 AM - 10:00 AM							
10:00 AM - 11:00 AM							
11:00 AM - 12:00 Noon							
12:00 Noon - 1:00 PM							
1:00 PM - 2:00 PM							
2:00 PM - 3:00 PM							
3:00 PM - 4:00 PM							
4:00 PM - 5:00 PM							
5:00 PM - 6:00 PM							
6:00 PM - 7:00 PM							
7:00 PM - 8:00 PM							

## Resources - Websites

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Study information can be drawn from a variety of sources. A sample list of study materials (websites and books) is provided below. These and other helpful resources may be found in a local college bookstore, on the internet, or at your place of employment. You may also be able to borrow them from an apprentice or journey person in your trade.

### Study Strategies and Exam Preparation Guide

The *Study Strategies & Exam Preparation Guide* is meant to be used in conjunction with this study guide. It provides direction and information on such areas as study habits, test preparation and test taking techniques.

Exam Preparation Guide: [https://www.aesl.gov.nl.ca/app/publications/exam\\_prep\\_guide.pdf](https://www.aesl.gov.nl.ca/app/publications/exam_prep_guide.pdf)

### Plan of Training (POT)

A *Provincial Plan of Training* details the full scope of learning for a particular occupation, including both technical training competencies and industry experiences necessary to write an IP Red Seal exam (and complete the requirements for Red Seal Certification), or to write a provincial examination. The Plan of Training is based on the NOA.

POT Website: <https://www.aesl.gov.nl.ca/app/plans.html>

### Red Seal Website

**Red Seal** is a program that sets common standards to evaluate the skills of tradespeople across Canada. It is a partnership between the Federal Government and the provinces/territories.

The Red Seal model has been based on the National Occupational Analyses (NOA) which supports the development of multiple-choice examinations. A new Red Seal Occupational Standard (RSOS) was introduced in 2015 and is taking the place of the NOA.

Red Seal Website: <http://www.red-seal.ca/>

### Millwright PRACTICE Exam

This is **NOT** an IP exam. This is a practice exam provided by the Inter-provincial Standards Red Seal program. It was developed using similar question types to that of a Red Seal exam. The exam is intended to be used for self-assessment in preparation for writing an IP Exam.

Sample questions can be found at:

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=124>

### Glossary of Terms

The Red Seal website also lists a Glossary of Terms which will be helpful in preparing for your IP exam:

[http://www.red-seal.ca/trades/industrialmech/2017rs.4s\\_.1ppc\\_gl.4ss.1ry-eng.html](http://www.red-seal.ca/trades/industrialmech/2017rs.4s_.1ppc_gl.4ss.1ry-eng.html)

### Acronyms

The Red Seal website also lists Acronyms which will be helpful in preparing for your IP exam:

[http://www.red-seal.ca/trades/industrialmech/2017rs.4s\\_.1pp.1\\_.1cr.4nym-eng.html](http://www.red-seal.ca/trades/industrialmech/2017rs.4s_.1pp.1_.1cr.4nym-eng.html)

### List of Tools and Equipment

The Red Seal website also shows a list of Tools and Equipment which will be helpful in preparing for your IP exam:

[http://www.red-seal.ca/trades/industrialmech/2017rs.4s\\_.1ppb\\_t.4.4ls-eng.html](http://www.red-seal.ca/trades/industrialmech/2017rs.4s_.1ppb_t.4.4ls-eng.html)



## Resources – Book List

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The books listed below can help you obtain information on specific topics. It is not necessary to use these books specifically, as you may find others that will be equally beneficial.

**If you wish to obtain any of the resources listed above, here is the reference information:**

- Blueprint Reading Basics*, Hammer, Warren, ISBN 978-0-8311-3125-8
- IPT's Crane and Rigging Handbook*, 4<sup>th</sup> Edition, Garby, Roland G, ISBN 0920855016
- IPT's Rotating Equipment, Machinery Reliability and Conditioning Monitoring*, Basaraba, Bruce, ISBN 0-920855-261
- IPT's Industrial Trades Handbook, Power Transmission Systems*, Basaraba, Bruce ISBN 0-920855-040
- Metalwork Technology and Practice*, 9<sup>th</sup> Edition, Tepp, Victor, ISBN 0-02-676486-9
- Metalwork Technology and Practice, Student Workbook*, Tepp, Victor, ISBN 0-02-676486-5
- Millwright Manual*, Province of BC Ministry of Labour, ISBN 0-7718-9473-2

## Disclaimer

Various external resources (websites, textbooks) have been listed in this study guide to assist an individual in preparing to write an IP Red Seal Exam. This does not mean the Department of Advanced Education, Skills and Labour, Newfoundland and Labrador endorses the material or that these are recommended as the best resources. There may be other resources of equal or greater value to an individual preparing for an IP Red Seal exam. The Department of Advanced Education, Skills and Labour has no control over the content of external textbooks and websites listed, and no responsibility is assumed for the accuracy of the material.

## Conclusion

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We hope this guide has provided you with some useful tools as you prepare for your IP Red Seal exam. If you have any questions regarding your IP Red Seal exam please contact your regional office (*see Appendix A for a list of regional offices*).

We appreciate your comments and feedback regarding the usefulness of this study guide. If you have any comments or suggestions, we welcome your feedback. The feedback form at the end of this guide can be used for this purpose.

## Appendix A: Regional Offices

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If you have any questions regarding your IP Red Seal exam, please contact one of the following regional offices:

Department of Advanced Education, Skills and Labour  
Apprenticeship and Trades Certification Division  
Toll Free: 1-877-771-3737  
<https://www.aesl.gov.nl.ca/app/>

Corner Brook
1-3 Union Street Aylward Building, 2 <sup>nd</sup> Floor Corner Brook, NL A2H 5M7
Telephone: (709) 637-2366 Facsimile: (709) 637-2519

Grand Falls-Windsor
42 Hardy Avenue Grand Falls-Windsor, NL A2A 2J9
Telephone: (709) 292-4215 Facsimile: (709) 292-4502

Clarenville
45 Tilley's Road Clarenville, NL A5A 1Z4
Telephone: (709) 466-3982 Facsimile: (709) 466-3987

St. John's
P.O. Box 8700 1170 Topsail Road Mount Pearl, NL A1B 4J6
Telephone: (709) 729-2729 Facsimile: (709) 729-5878

Happy Valley – Goose Bay
163 Hamilton River Road Bursey Building Happy Valley – Goose Bay, NL A0P 1E0
Telephone: (709) 896-6348 Facsimile: (709) 896-3733

## Appendix B: Calculator Use

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The picture below shows a calculator with the same functions as the one you will be provided with during your exam. It is advisable to borrow or purchase one with similar functions so that you can familiarize yourself with it before you write your exam.



# Appendix C: Answer Sheet Example

With your exam you will be given an answer sheet like the one below. When answering multiple choice questions be sure to fill the circle completely and fill the circle that corresponds to the question on the exam.

Dual readhead scanner  required  to score this sheet

KEY ID  
A B C D E

SCORING & PRINTING OPTIONS:  
 RESCORE     MULTIPLE ANSWER SCORING  
 This sheet always uses the "Total Only" scoring option.

1 T F A B C D E    26 T F A B C D E    51 T F A B C D E    76 T F A B C D E  
 2 A B C D E    27 A B C D E    52 A B C D E    77 A B C D E  
 3 A B C D E    28 A B C D E    53 A B C D E    78 A B C D E  
 4 A B C D E    29 A B C D E    54 A B C D E    79 A B C D E  
 5 A B C D E    30 A B C D E    55 A B C D E    80 A B C D E  
 6 A B C D E    31 A B C D E    56 A B C D E    81 A B C D E  
 7 A B C D E    32 A B C D E    57 A B C D E    82 A B C D E  
 8 A B C D E    33 A B C D E    58 A B C D E    83 A B C D E  
 9 A B C D E    34 A B C D E    59 A B C D E    84 A B C D E  
 10 A B C D E    35 A B C D E    60 A B C D E    85 A B C D E  
 11 A B C D E    36 A B C D E    61 A B C D E    86 A B C D E  
 12 A B C D E    37 A B C D E    62 A B C D E    87 A B C D E  
 13 A B C D E    38 A B C D E    63 A B C D E    88 A B C D E  
 14 A B C D E    39 A B C D E    64 A B C D E    89 A B C D E  
 15 A B C D E    40 A B C D E    65 A B C D E    90 A B C D E  
 16 A B C D E    41 A B C D E    66 A B C D E    91 A B C D E  
 17 A B C D E    42 A B C D E    67 A B C D E    92 A B C D E  
 18 A B C D E    43 A B C D E    68 A B C D E    93 A B C D E  
 19 A B C D E    44 A B C D E    69 A B C D E    94 A B C D E  
 20 A B C D E    45 A B C D E    70 A B C D E    95 A B C D E  
 21 A B C D E    46 A B C D E    71 A B C D E    96 A B C D E  
 22 A B C D E    47 A B C D E    72 A B C D E    97 A B C D E  
 23 A B C D E    48 A B C D E    73 A B C D E    98 A B C D E  
 24 A B C D E    49 A B C D E    74 A B C D E    99 A B C D E  
 25 A B C D E    50 A B C D E    75 A B C D E    100 A B C D E

ANSWER KEY INFO.  
# OF KEYS  
ITEM COUNT

0	0	0	2
1	1	1	3
2	2	2	4
3	3	3	
4	4	4	
5	5	5	
6	6	6	
7	7	7	
8	8	8	
9	9	9	

PERFORMANCE ASSESSMENT  
% OF TOTAL SCORE (00 = 100%)    POINTS EARNED

0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Bar Code

NUMBER CORRECT	
PERCENT CORRECT	
ROSTER NUMBER	
SCORE	
RESCORE	

COMBINED POINTS EARNED	
COMBINED PERCENT CORRECT	
LETTER GRADE	
SCORE	
RESCORE	

200 ITEM

MARKING INSTRUCTIONS  
Use a No. 2 Pencil  
Fill oval completely  
Erase cleanly

STUDENT ID NUMBER

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

NAME \_\_\_\_\_  
SUBJECT \_\_\_\_\_  
PERIOD \_\_\_\_\_ DATE \_\_\_\_\_

## Feedback Form

### Study Guide - Industrial Mechanic (Millwright)

Please answer the following:

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- (1) This Study Guide is a useful tool for exam preparation.  
 strongly agree     agree     disagree     strongly disagree
- (2) The topics contained in the guide are arranged in a logical order.  
 strongly agree     agree     disagree     strongly disagree
- (3) The design and format of the guide caught my attention.  
 strongly agree     agree     disagree     strongly disagree
- (4) The instructions throughout the guide are clear and to the point.  
 strongly agree     agree     disagree     strongly disagree
- (5) The resources listed in this guide are suitable and valuable.  
 strongly agree     agree     disagree     strongly disagree
- (6) The guide should contain more information.  
 strongly agree     agree     disagree     strongly disagree

Suggested information/resources to include:

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Additional Comments:

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**Please complete this form and return via fax or mail to the following:**

Department of Advanced Education, Skills and Labour  
Apprenticeship and Trades Certification Division  
Standards and Curriculum Unit  
45 Tilley's Road, Clarenville, NL A5A 1Z4  
Fax: (709) 466-3987

